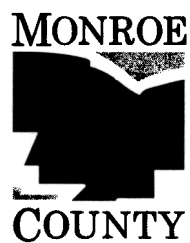


# **Prevent Mercury Pollution**

Use Best Management  
Practices for Amalgam  
Handling and Recycling





Prepared by the Monroe County Department of Health, in cooperation with  
the University of Rochester's Department of Dentistry and Eastman Dental Center and  
the Monroe County Department of Environmental Services,  
with funding by a grant from the U.S. Environmental Protection Agency

## Introduction



This booklet has been developed to enlist your help in a region-wide effort to manage amalgam waste so as to protect the environment from mercury. The amalgam management practices described in this booklet were developed during the past few years by dentists at the University of Rochester's Department of Dentistry and Eastman Dental Center in Rochester, New York, and by dentists in Minnesota, in cooperation with the Western Lake Superior Sanitary District. The methods have been shown to be effective in keeping mercury from amalgam out of the environment.

Share this booklet with your staff. When new employees join your staff, make sure that they read this booklet also. You and your staff together can evaluate your current practices and, where appropriate, adopt new practices to protect the environment from the discharge of mercury from dental amalgam.

## How mercury from dental amalgam can get into the environment

There are many ways that mercury from dental amalgam can get into the environment:

- Amalgam particles that are rinsed down drains or that escape poorly maintained chair-side traps and vacuum pump filters travel through the sewer system to the wastewater treatment plant. From there mercury from the amalgam may enter the environment in one of three ways: (1) It may be released directly to a waterway; (2) It may be released to the air if the treatment plant sludge is incinerated and then re-deposited to the ground or a waterway; (3) It may be released to soil if treatment plant sludge is land spread.
- If a dental practice is connected to a septic system, amalgam particles become part of the sludge in the septic tank, which is eventually pumped out and transported to a wastewater treatment plant or land spread. Any mercury from the amalgam that becomes soluble will end up in groundwater.
- Placing an item that contains amalgam particles in a red bag allows mercury from the amalgam to be released into the air if the medical waste is incinerated. The volatilized mercury is then re-deposited to the ground or a waterway.
- If items that contain amalgam particles are discarded with the ordinary trash, there is the potential for mercury from the amalgam to leach into groundwater when the trash is placed in a landfill not designed to handle hazardous waste.
- In an older dental clinic, pure bulk mercury from past practices may have settled in sink traps. The mercury is gradually released into wastewater for many years after the use of bulk mercury has been discontinued.

New federal regulations greatly reduce the amount of mercury that is allowed to be discharged from a municipal wastewater system or an incinerator. By implementing the best management practices described in this booklet, you can reduce the level of mercury in the environment and avoid the need for increased regulations in the years to come.

## Amalgam storage and handling

Stock your amalgam materials in a good choice of capsule sizes, in order to better select the right amount of material for a particular restoration. This will minimize waste.

Dental scrap amalgam should be collected and stored in two designated, tightly closed, widemouth plastic containers. One container should be labeled CONTACT AMALGAM (amalgam that has been in the patient's mouth). The other should be labeled NONCONTACT AMALGAM. Neither the New York State Department of Health nor the Occupational Safety and Health Administration (OSHA) requires that contact amalgam be discarded in a medical waste red bag.

Most recyclers prefer that *contact* amalgam be transported for recycling in a disinfectant. The liquid is visual evidence that the contact amalgam has been disinfected. *Noncontact* amalgam in a tightly sealed container can be stored and transported dry.

## Amalgam capsule handling

Collect and store the entire contents of broken or unusable capsules with your noncontact scrap amalgam. If empty dental amalgam capsules contain no visible amalgam materials, they may be placed in the trash.

If there is a spill of mercury from a capsule, contain it and clean it up immediately. Keep mercury clean-up materials on hand, and train a staff member in proper spill clean-up. Inexpensive mercury clean-up materials are available from science and safety equipment suppliers. (Some suppliers are listed on page 8.)

## Amalgam trap and filter handling

When the fine particles of amalgam come in contact with cleaning agents and chemicals in the suction system and sewers, the mercury may be released. Large particles of amalgam can be prevented from entering the sewer system by the use of chair-side traps and vacuum pump filters. Material captured in the traps and filters can be sent to a recycler. Calculations based on data in scientific literature indicate that, when used properly, chair-side traps and vacuum pump filters can capture about 70% of the amalgam that enters the vacuum system.

- **Never rinse scrap amalgam down the drain.**
- **Never place scrap amalgam in the medical waste red bag.**
- **Never place scrap amalgam in the trash.**

Recommended techniques for collecting amalgam from the chair-side traps are as follows:

- 1 Change or clean chair-side amalgam traps often. The frequency may vary from daily to weekly depending on how often the chair is used for amalgam placement or removal and the effectiveness of the suction.
- 2 Flush the vacuum system with disinfecting line solution before changing the chair-side trap. The best method is to flush the line at the end of the day, and then change the trap the first thing the next morning.
- 3 Use universal precautions (gloves, glasses and mask) when handling the chair-side trap. Choose utility gloves intended for cleaning and handling wastes for this procedure.
- 4 Do not place gloves, plastic bags or paper towels into the recycling container. These add to the volume of the waste created and cause problems in the recycling equipment.
- 5 Remove all visible amalgam by tapping the contents into the container labeled CONTACT AMALGAM. Close the cover tightly. If the trap is visually clean, it can be put in the trash. These visually clean traps have been determined to be nonhazardous.\* (A heavily contaminated trap should always be recycled. It should be placed in the contact amalgam container.



Vacuum pump filters are usually located upstream of the central vacuum pump. Recommended techniques for recycling the vacuum pump filters are as follows:

- 1 Replace or dispose of these filters regularly as recommended by the equipment manufacturer.
- 2 Use universal precautions.
- 3 Remove the filter and decant, over a tray, as much liquid as possible without losing visible amalgam.
- 4 Put the lid on the filter and place the filter in the box in which it was originally shipped. When the box is full, the filters should be recycled.



\*Shown by the Toxicity Characteristic Leaching Procedure (TCLP) to be acceptable for landfilling.

## Plumbing replacement and repairs

After your office adopts its new amalgam management practices, it may be a good time to replace sink traps. Mercury from past practices often settles at low points such as sink traps and sumps. The slow dissolution of the mercury in a sink trap or sump can release mercury into the wastewater for years after past disposal practices have been corrected. Whenever plumbing parts are moved or cleaned, caution should be taken to avoid spilling the contents in case amalgam or mercury are present. Pour and brush out the sludge and handle it as you would handle contact amalgam. The plumbing parts can be put back in place or discarded in the trash.

## Renovations

If you have an older dental office, alert renovators to the possibility of mercury contamination in carpets, in floor cracks, behind moldings and other areas where bulk mercury may have been used, or where amalgam capsules may have been spilled. Call your county health department, district office of the New York State Department of Health, or regional office of the New York State Department of Environmental Conservation if you have questions about disposal of renovation debris. (See page 7 for telephone numbers.)

## Keep informed on separator technologies

Systems are available to treat wastewater contaminated with amalgam particles that are too fine to be caught in traps or filters. Most systems employ centrifugation or enhance sedimentation of particles. Some can also capture mercury that is in solution. Some of the new equipment can remove more than 99% of the mercury in the wastewater. It is used in some European countries, where removal rates of at least 95% are required. The systems are being evaluated in dental offices in the U.S. Equipment can be purchased or leased. These systems are expensive now, but may become cheaper in the future. Contact 716-292-3935 for further information.

## Recycle bulk elemental mercury stock

In 1994 the American Dental Association recommended that dentists eliminate the use of bulk dental mercury by switching to precapsulated amalgam alloy in their practices. Measurement of the ratio of liquid mercury to amalgam powder is much more exact with the precapsulated technique. There is also less possibility of leakage during trituration. The use of precapsulated amalgam alloy eliminates mercury dispensers and containers as sources of mercury vapor, and eliminates the possibility of spilling a large quantity of mercury.

Recycle bulk mercury. If there is a spill of a large amount of bulk mercury before it is eliminated from your office, call your county health department or district office of the New York State Department of Health for instructions about cleaning it up. (See page 7 for telephone numbers.)

- **Recycle any bulk elemental mercury that may still be on hand in your office.**

## Select a recycling method

There are four options for recycling the amalgam from your dental office.

- 1 **Amalgam containers only:** Mail via U.S. Mail to the Monroe County Household Hazardous Waste Facility in Rochester. It has authorization to collect noncontact amalgam and contact amalgam by mail from other counties, as well as from Monroe County. Make arrangements with the Monroe County Household Hazardous Waste Facility at 716-760-7600 to receive detailed instructions for amalgam recycling. Packaging materials will be provided for your office as long as supplies last.
- 2 **Amalgam containers, vacuum pump filters and bulk mercury:** Deliver directly to the Monroe County Household Hazardous Waste Facility in Rochester. Materials can be dropped off without an appointment in the Industrial Waste Office foyer of Building 15 at 444 East Henrietta Road, in Rochester. The foyer is open between 7:00 a.m. and 4:30 p.m. Monday through Friday. The Facility has authorization to accept deliveries of these materials from other counties, as well as from Monroe County. Call 716-760-7600 for directions to the Facility and other information.
- 3 **Amalgam containers and vacuum pump filters:** Ask your infectious or hazardous waste hauler if delivery of amalgam containers and vacuum pump filters to a mercury recycler or the Monroe County Household Hazardous Waste Facility can be arranged.
- 4 **Amalgam containers, vacuum pump filters and bulk mercury:** Work directly with an amalgam recycling company. There are many questions you will need to ask when choosing a recycler:
  - What can I recycle?
    - Contact amalgam
    - Noncontact amalgam
    - Chair-side traps
    - Vacuum pump filters
    - Bulk mercury
  - What are the costs or profits for recycling each of the above?
  - What are the instructions for disinfection of contact amalgam?
  - What are the packaging requirements for contact amalgam, noncontact amalgam chair-side traps, vacuum pump filters and bulk mercury?



(See page 6 for a partial list of recyclers.

## Recycling Companies

Advanced Environmental Recycling Co.  
2591 Mitchell Ave.  
Allentown, PA 18103  
800-554-AERC

Amalgaway Mail Disposal Service  
1002 West Troy Ave.  
Indianapolis, IN 46225  
800-267-1467

Bethlehem Resource Recovery Division  
890 Front St.  
P.O. Box Y  
Hellertown, PA 18055  
610-838-7034

Dental Recycling North America, Inc.  
P.O. Box 1069  
Hackensack, NJ 07601  
800-525-3793

DFG Mercury Corp.  
909 Pitner Ave.  
Evanston, IL 60202  
847-869-7800

Dorell Refinery  
533 Atlantic Ave.  
Freeport, NY 11520  
800-645-2794

Everlights  
8500 West 191st Street, Suite  
Mokena, IL 60448  
815-469-0631

Garfield Refining  
810 East Cayuga  
Philadelphia, PA 19124-3892  
800-523-0968 ext. 300

Global Recycling Technologies, Inc.  
218 Canton St.  
Stoughton, MA 02072  
781-341-6080

Maquire & Strickland Refining Co.  
1290 81st Ave. NE  
Minneapolis, MN 55432  
612-786-2858

Mercury Refining Company, Inc.  
1218 Central Ave.  
Albany, NY 12205  
800-833-3505

Mercury Waste Solutions, Inc.  
21211 Durand Ave.  
Union Grove, WI 53182  
414-878-2599

RECYCLIGHTS, Inc.  
401 West 86th St.  
Minneapolis, MN 55420  
800-831-2852

Safety Kleen  
P.O. Box 97  
Avon, NY 14414  
716-226-2411

**Note** The above list does not imply an endorsement of any company. Each user is responsible for verifying vendor information. The list is not intended to be all-inclusive, but is provided for informational purposes only.

## Contacts for Applicable Regulations

NYSDEC, Region 8 (Counties of Genesee,  
Livingston, Monroe, Ontario)  
Division of Water  
6274 East Avon-Lima Road  
Avon, NY 14414  
716-226-2466

NYSDEC, Region 9 (Counties of Allegany,  
Wyoming)  
Division of Water  
270 Michigan Avenue  
Buffalo, NY 14203-2999  
716-851-7070

Allegany County  
Public Health Director  
Allegany County Health Department  
County Office Building  
Belmont, NY 14813  
716-268-9254

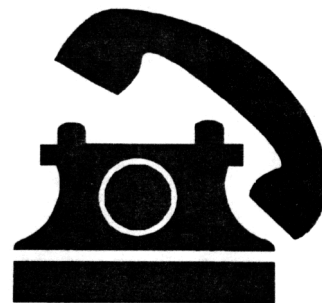
Genesee County  
NYSDEC Region 8; also contact the  
municipality

Livingston County  
Environmental Health Director  
Livingston County Health Department  
2 Livingston County Campus  
Mount Morris, NY 14510-1691  
716-243-7280

Monroe County  
Industrial Waste Control Section  
Monroe County Department of  
Environmental Services  
444 East Henrietta Road  
Rochester, NY 14620  
716-760-7600

Ontario County  
Cornell Cooperative Extension, Ontario  
County  
480 North Main St.  
Canandaigua, NY 14424  
716-394-4110

Wyoming County  
*Public wastewater system:*  
NYSDEC Region 9  
*Private wastewater system:*  
Public Health Engineer  
Wyoming County Health Department  
338 North Main St.  
Warsaw, NY 14569  
716-237-2666



## Providers of mercury spill clean-up products

Bel-Art Products  
Pequannock, NJ 07440-1992  
201-694-0500

Fisher Scientific  
52 Fadem Road  
Springfield, NJ 07081  
800-766-7000

Lab Safety Supply, Inc.  
P.O. Box 1368  
Janesville, WI 53547-1368  
800-356-0783

Note: The provision of these names does not imply an endorsement, nor is it intended to be all-inclusive. Each user is responsible for verifying vendor information. The list is provided for informational purposes only.

## Contacts for further information

Monroe County Department of  
Environmental Services  
716-760-7610, ext. 7055

Monroe County Department of Health  
716-292-3935

## Summary of Recycling and Disposal Options

Waste Type	Source	Option
Amalgam particles - noncontact	Excess mix, broken or unusable capsules	Send to a recycler.
Amalgam particles - contact*	Chair-side traps	1. Change regularly. 2. Send sludge to a recycler. 3. Discard trap in the trash.
Amalgam particles - contact*	Vacuum pump filters	1. Change regularly. 2. Decant some of the liquid. 3. Put on the lid and recycle in the original shipping carton.
Elemental mercury	Past use of bulk elementary mercury	Manage as hazardous waste; send to a recycler.
Empty amalgam capsules		Discard in the trash.

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